

**MEMORANDUM** (LABORATORY DATA REPORT)

**EPA - General Parameters**

**In reply refer to:** 10-KH75

**To:** Rick Wilkin

**From:** Kristie Hargrove

**Lab:** General Parameters

**Thru:** Cindy Paul  
Mark White  
Lisa Costantino

**Date:** 10/14/2010

**Technical Directive No.:** EPAGP216  
**Task No.:** 23993

**Originator:** Rick Wilkin  
**Copies:** Rick Wilkin  
Cindy Paul  
Lisa Costantino  
Kristie Hargrove

**Project/Sample Site:** Pavillion Groundwater

**Date Collected:** 10/5-10/7/2010

**Date Received:** 10/8/2010

**Date Analyzed:** 10/13/2010

**No. Samples Analyzed:** 9

**Sample Set No.:** 5763

**Sample Matrix:** Water

**Analysis Type:** TC,DC,TIC, DIC, TOC, DOC

**Sample Preparation:** See comments below

**Method(s) Used :** RSKSOP-102 rev. 5, Determination of Total Carbon, Total Organic Carbon, Dissolved Carbon, and Dissolved Organic Carbon in Water using the Dohrmann DC-80 Carbon Analyzer

**Comments:**

Quality control measures performed along with your samples included analysis of method blanks, sample duplicates, calibration check standards, matrix spikes, a mixed standard and a known ERA sample. The samples labeled EPAMW 01, EPAMW 02, and LD 02 were designated filtered in the field by the originator. Therefore the filtered sample values will be reported as dissolved carbon. The samples submitted for analysis of TOC and DOC were acidified to a pH of < 2 with phosphoric acid and sparged for three minutes with UHP nitrogen to remove the inorganic carbon. The samples were analyzed for TC, DC, TOC, and DOC using the Dohrmann DC-80 Carbon Analyzer. TIC and DIC values are calculated values obtained by subtracting the unpreserved TOC or DOC value from the TC or DC value. A MDL study was performed on the Dohrmann DC-80 on 4/19/2010. The current MDL is 0.103 mg/L. Note: No sample was received for Field Sample ID LD 02 DUP.

## EPA - General Parameters

## Analytical Results Report

Laboratory:

General Parameters

Technical Directive:

EPAGP216

Analyst:

Kristie Hargrove

Method:

RSKSOP-102 Rev. 5

			Analytes	TOC		TC		TIC		DOC		DC		DIC	
			Codes	7440-44-0-TOC		7440-44-0-TC		7440-44-0-TIC		7440-44-0-DOC		7440-44-0-DC		7440-44-0-DIC	
			Methods	RSKSOP-102 Rev. 5		RSKSOP-102 Rev. 5		RSKSOP-102 Rev. 5		RSKSOP-102 Rev. 5		RSKSOP-102 Rev. 5		RSKSOP-102 Rev. 5	
			Unit	mg/L		mg/L		mg/L		mg/L		mg/L		mg/L	
			MDL	0.103		**0.103		-		0.103		**0.103		-	
			QL	0.500		**0.500		-		0.500		**0.500		-	
Field Sample ID	Lab Sample ID	Date Collected	Date Analyzed	Data	DF	Data	DF	Data	DF	Data	DF	Data	DF	Data	DF
RD 01	5763-1	10/5/2010	10/13/2010	0.506	1	25.4	10	24.9	-	-	-	-	-	-	-
EPAMW 01	5763-2	10/6/2010	10/13/2010	-	-	-	-	-	-	8.51	1	35.4	10	26.9	-
EPAMW 02	5763-3	10/6/2010	10/13/2010	-	-	-	-	-	-	14.5	1	34.9	10	20.4	-
LD 01	5763-4	10/6/2010	10/13/2010	0.568	1	18.4	10	17.8	-	-	-	-	-	-	-
LD 01 DUP	5763-5	10/6/2010	10/13/2010	0.558	1	17.8	10	17.2	-	-	-	-	-	-	-
LD 01 DUP	5763-5 LAB DUP	10/6/2010	10/13/2010	0.570 (RPD=2.13)	1	18.0 (RPD=1.12)	10	17.4	-	-	-	-	-	-	-
RD 01 FIELD BLANK	5763-6	10/5/2010	10/13/2010	ND (0.044)	1	BQL (0.119)	1	0.075	-	-	-	-	-	-	-
TRIP BLANK	5763-7	10/6/2010	10/13/2010	ND (0.061)	1	0.570	1	0.509	-	-	-	-	-	-	-
EQ BLANK	5763-8	10/7/2010	10/13/2010	ND (0.034)	1	BQL (0.204)	1	0.170	-	-	-	-	-	-	-
LD 02	5763-9	10/7/2010	10/13/2010	-	-	-	-	-	-	2.60	1	11.7	10	9.10	-
LD 02	5763-9 LAB DUP	10/7/2010	10/13/2010	-	-	-	-	-	-	2.70 (RPD=3.77)	1	11.7 (RPD=0)	10	9.00	-
LD 02 DUP*	5763-10	10/7/2010	10/13/2010	-	-	-	-	-	-	-	-	-	-	-	-

**Comments:** The data quality objective for the precision of sample duplicates is a relative percent difference of <10. The precision objective was met for the duplicate samples in this sample set. A MDL study was performed on the Dohrmann DC-80 on 4/19/2010. The current MDL is 0.103 mg/L. \*Note. No sample was received for Field Sample ID LD 02 DUP.

\*\*The MDL and QL should be raised by the same factor as the dilution factor in the samples that were diluted.

1. If the parameter was detected above the quantitation limit (QL), the numeric result is reported; BQL denotes that the parameter was not detected at or above the quantitation limit; BQL ( ) denotes that the parameter was detected above the method detection limit (MDL) but below QL and the estimated numeric result is reported in parenthesis; ND denotes that the parameter was not detected at all. All the results are corrected with dilution factors (DF), if applicable. NSF - denotes there was an insufficient amount of sample to analyze.

2. "-/-" denotes that the information is not available or the analyte is not analyzed.

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## Analytical Results Report

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Technical Directive:

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Analyst:

Kristie Hargrove

Method:

RSKSOP-102 Rev. 5

			Analytes	TOC			TC			DOC			DC		
			Codes	7440-44-0-TOC			7440-44-0-TC			7440-44-0-DOC			7440-44-0-DC		
			Methods	RSKSOP-102 Rev. 5			RSKSOP-102 Rev. 5			RSKSOP-102 Rev. 5			RSKSOP-102 Rev. 5		
			Unit	mg/L			mg/L			mg/L			mg/L		
			MDL	0.103			0.103			0.103			0.103		
			QL	0.500			0.500			0.500			0.500		
QC Sample ID	Additional ID	Date Prepared	Date Analyzed	Data	True Value	% REC.	Data	True Value	% REC.	Data	True Value	% REC.	Data	True Value	% REC.
MB	METHOD BLANK	10/13/2010	10/13/2010	ND	-	-	ND	-	-	ND	-	-	ND	-	-
MB	METHOD BLANK	10/13/2010	10/13/2010	ND	-	-	ND	-	-	ND	-	-	ND	-	-
SS	ERA 19	9/3/2010	10/13/2010	39.8	39.9	99.7	39.8	39.9	99.7	39.8	39.9	99.7	39.8	39.9	99.7
SS	ERA 19	9/3/2010	10/13/2010	41.5	39.9	104	41.5	39.9	104	41.5	39.9	104	41.5	39.9	104
SS	MIXED STANDARD	10/13/2010	10/13/2010	-	-	-	13.0	12.0	108	-	-	-	13.0	12.0	108
CCC	CHECK STANDARD	10/13/2010	10/13/2010	0.465	0.500	93.0	0.972	1.00	97.2	0.465	0.500	93.0	0.972	1.00	97.2
CCC	CHECK STANDARD	10/13/2010	10/13/2010	10.0	10.0	100	5.25	5.00	105	10.0	10.0	100	5.25	5.00	105
CCC	CHECK STANDARD	10/13/2010	10/13/2010	5.25	5.00	105	10.0	10.0	100	5.25	5.00	105	10.0	10.0	100
MS	RD 01 SPIKE	10/13/2010	10/13/2010	10.2	0.506 (9.90)	97.9	*12.0	*2.54 (9.90)	95.6	-	-	-	-	-	-

**Comments:** The data quality objective for ERA #19 is 83.5-116% recovery. The data quality objective for the accuracy of continuing calibration check standards and mixed standards is 90-110% recovery. The data quality objective for the recovery of matrix spike samples is 80-120% recovery. These objectives were met for the standards and spikes during this analysis. The matrix spikes were prepared by adding 20 µL of a 1000 mg/L standard into 2 mL of sample yielding a spike concentration of 9.90 mg/L for a 1000µl injection. The matrix spike recoveries were calculated according to the equation: %Recovery = 100 \* (Spiked Sample Concentration (Data) - Native Sample Concentration) / Spike Concentration. \*The values for spike concentrations are calculated and reported without the dilution factors applied. A MDL study was performed on the Dohrmann DC-80 on 4/19/2010. The current MDL is 0.103 mg/L.

1. **MB** - Method Blank. **CCC** - Continuing Calibration Check. A calibration standard analyzed within the batch of samples. **LCS** - Laboratory Control Spike. A laboratory blank spiked with analytes at known concentrations. **MS** - Matrix Spike. A field sample spiked with known concentrations of analytes. The field sample id is identified. **SS** - Second Source. Samples obtained from ERA and analyzed as second sources are identified by their designated names. The mixed standard analyzed as a second source is 50 mg/L inorganic carbon and 2 mg/L organic carbon. **DUP** - Field sample duplicate analysis. A sample selected by the lab analyst to analyze as a duplicate. It is reported in the sample result section. **% REC** - Percent Recovery. Calculated as the percentage of the results to the true values. It equals to % accuracy for CCC. The **True Value** column for matrix spikes lists the unspiked native sample concentration along with the spike concentration in parentheses.